

*CREATING ACTIVITY SCHEDULES USING
MICROSOFT® POWERPOINT®*

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We describe how PowerPoint® presentation software can be used to create computer activity schedules to teach individuals with special needs. Presented are the steps involved in creating activity schedules with close-ended and open-ended activities, and for preparing schedules that include photos, sounds, text, and videos that can be used to occasion an individual's engagement in a variety of learning activities.

DESCRIPTORS: activity schedules, autism, computers, PowerPoint®

A substantial body of research illustrates the use of activity schedules in teaching children and adults with autism (e.g., Krantz, MacDuff, & McClannahan, 1993; MacDuff, Krantz, & McClannahan, 1993; McClannahan & Krantz, 1999; Mc-

Clannahan, MacDuff, & Krantz, 2002). Typically, activity schedules consist of a sequence of pictures, words, or symbols that occasion a chain of activities. These cues are often presented in notebooks or on placards. A proficient schedule user is an individual whose completion of and transition between activities is occasioned by the visual cues presented in his or her schedule. Activity schedules may thus facilitate the completion of lengthy response chains and independent transition from one activity to the next (see MacDuff et al.; Krantz et al.). They also provide a context for teaching leisure, social, and communication skills (Krantz & Mc-

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Trapelo Road, Waltham, Massachusetts 02254 (e-mail: robert.stromer@umassmed.edu). Reprints and a compact disk containing the computer activity schedule illustrated in Figure 1 and the sounds, pictures, and movies used in the schedule are available from either author.

Clannahan, 1993, 1998; McClannahan *et al.*; Stevenson, Krantz, & McClannahan, 2000). As such, activity schedules often have a valuable role in child and adult education (McClannahan & Krantz; McClannahan *et al.*; Rehfeldt, 2002).

The use of computer activity schedules is a way to teach functional skills by integrating multimedia technology with notebook or placard schedules. Previous research (e.g., Dixon, 2003) has described methods in which relatively common computer programs have been used to develop useful tools for behavior analysts. We have used Microsoft® PowerPoint® to make computer activity schedules for children diagnosed with autism spectrum disorders (Kimball, Kinney, Taylor, & Stromer, 2003a, 2003b; Stromer, Kinney, Taylor, & Kimball, *in press*). Such computer schedules are relatively easy to construct and have been found to be effective in teaching basic repertoires of independent schedule following to children (aged 3 to 8 years) in home and classroom settings (Kimball *et al.*, 2003a; and see Figure 1). Afterwards, such schedules may be expanded to teach more complex skills (Dauphin, Kinney, & Stromer, *in press*; Kinney, Vedora, & Stromer, 2003). For example, the boy with autism in Dauphin *et al.* learned sociodramatic play routines modeled in embedded videos showing what to say and do with the materials scheduled for the activities. Afterwards, the boy was able to perform the same play routines in the presence of still photographs that appeared in his notebook schedules.

The goal of blending computer and notebook schedules can be achieved by establishing computer then notebook schedules (Dauphin *et al.*, *in press*; Kimball *et al.*, 2003a) or by establishing notebook then computer schedules (Kinney *et al.*, 2003). Currently, for individuals new to schedules, we recommend establishing an initial computer schedule after a standard notebook

schedule has been established using the procedures suggested by McClannahan and Krantz (1999). After doing so, the notebook content—its activities, photographs, and corresponding sounds and video clips (see below)—can be imported into the computer. It is also beneficial for the learner to have mastered specific skills prior to learning to use activity schedules. These include discriminating pictures from their backgrounds, matching identical objects, picture-object correspondence skills, and tolerance for manual guidance (see McClannahan & Krantz). For computer schedules, the learner should also be accustomed to making perceptual contact with visual stimuli presented on the computer screen, and should be comfortable operating a computer mouse.

The purpose of this article is to describe how PowerPoint® can be used to create computer activity schedules. We have chosen PowerPoint® because it is widely available and is compatible with other Microsoft® authoring tools. PowerPoint® also has many support materials commercially available and allows the user great flexibility. Directions are provided for creating activity schedules using PowerPoint® 2000 SR-1 and PowerPoint® 2002 (included with Office XP). Unless specified, the directions provided are appropriate for both versions of the program and will work with Windows 98, Windows 2000, and Windows XP operating systems. The directions will also be useful for Macintosh® users, although there may be subtle variations in the steps.

Figure 1 illustrates components of a computer schedule using known content. This schedule begins with the textual and auditory cue, "Let's do your activity schedule" (Photo 1). Clicking on the "page turner" (the square with an arrowhead) produces the activity picture (Photo 2) along with its label (e.g., "Coloring"). In most instances, activity pictures show only the object or materials

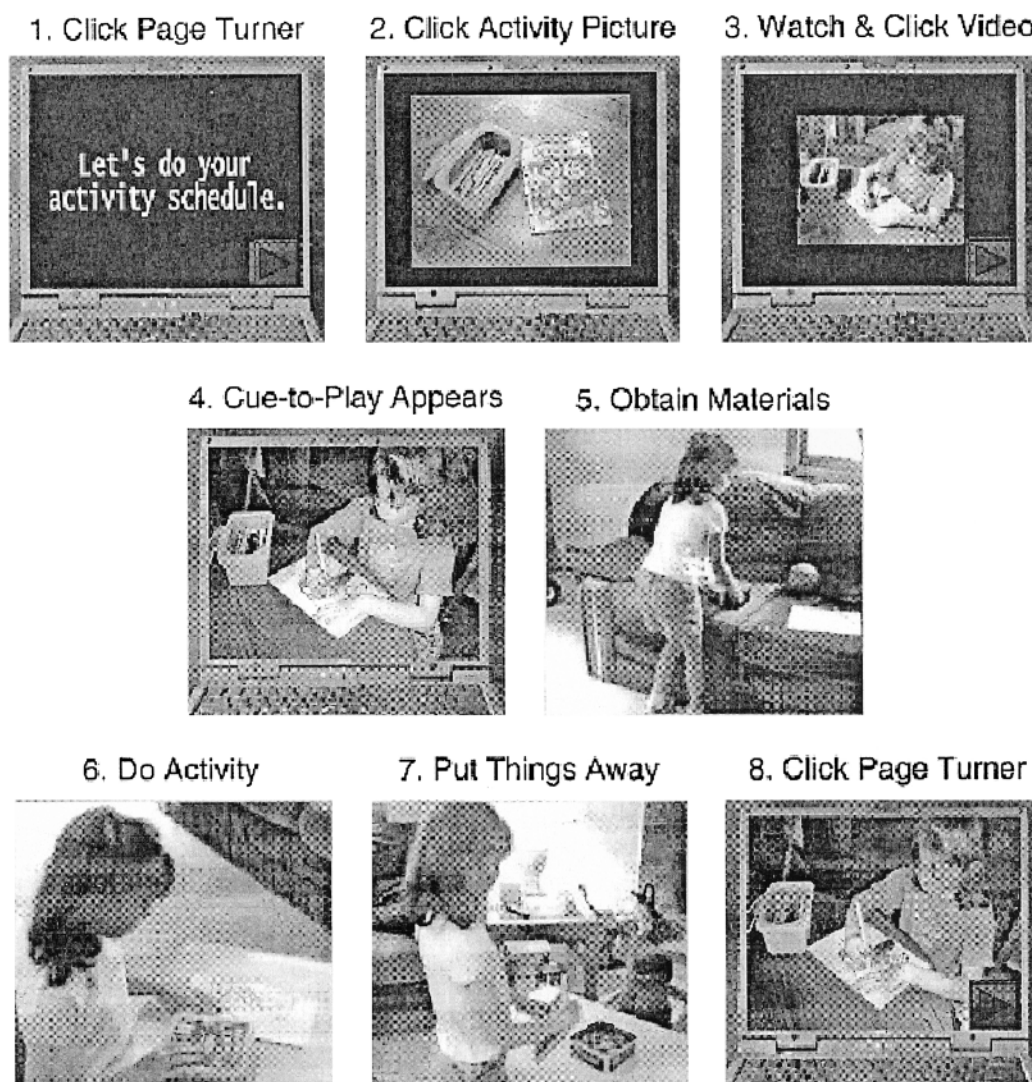


Figure 1. Photos show components of one of the activities in a computer schedule (coloring).

involved on a common background. Clicking on the picture produces a second, expanded label (e.g., "Coloring is fun"), followed by a 15-s video clip of the child doing the activity (Photo 3). After watching the video, the child clicks the page turner of the movie slide and the cue-to-play slide appears (Photo 4). The cue to play is a contextual picture, here showing the child engaged with the activity. The child then obtains the coloring materials (Photo 5), completes the activity (Photo 6), and puts the materials away

(Photo 7). Afterwards, the child returns to the computer that shows the cue-to-play slide with a page turner (Photo 8). (This page turner appears 10 s after the child leaves the computer to do the activity.) Clicking the page turner starts the next activity in the schedule. Closed activities, such as coloring and writing one's name, end when the child completes the task. The computer times open activities (e.g., playing basketball): When the clock times out, a recording says, "Time to pick up."

Figure 2 shows a Slide Sorter view of the 12 slides that make up the three-item computer schedule described above. In this arrangement, after the opening "Let's do your activity schedule" slide, the first activity is writing one's name: Slides 2, 3, and 4 show the activity picture, video, and cue to play, respectively. The basketball activity is next (a timed activity), then coloring. The schedule ends with the textual slide ("I did my schedule"), and clicking the page turner produces a photo of a special end-of-schedule activity—playing a compact disk on the teacher's laptop computer. The figure also shows the sound, picture, and movie files involved in the schedule. The order of the activities in the schedule will change every day to ensure the child's attention to the events associated with an activity.

MATERIALS NEEDED AND SYSTEM REQUIREMENTS

To create computer activity schedules using the instructions provided, we suggest the following minimum system requirements: 133 MHz or higher Pentium-compatible CPU, at least 64 MB of RAM, 2 GB with 650 MB available hard-disk space, VGA or higher resolution monitor, keyboard, mouse, and speakers. For optimal use, we suggest the following: 300 MHz or higher processor clock speed, at least 128 MB of RAM, 1.5 GB of available hard-disk space, and Super VGA (800 × 600) or higher resolution video adapter and monitor. Also needed is Logitech® QuickCam Pro 3000 or ClickSmart 510 for creating sounds, pictures, and videos.

PICTURE ACTIVITY SCHEDULES WITH CLOSE-ENDED ACTIVITIES CREATING SOUNDS, PHOTOGRAPHS, AND VIDEOS

Of the many options for digitizing auditory and visual content, we describe how

photographs, sounds, and videos can be recorded using Logitech® QuickCam Pro 3000 and ClickSmart 510. The accompanying software must be installed on the computer. We focus on these tools because they are easy to use, reliable and inexpensive, and produce acceptable results. Information on taking pictures and sound recording is also widely available. For examples, McClannahan and Krantz (1999, pp. 26–27) offer suggestions on basic photography, and books by Dowrick (1991), Neumann (1999) and Rubin (2002) are useful guides for producing videos.

Recording Sounds with the Webcam

1. Go to the desktop and open SOUND RECORDER (may be found by navigating from START to PROGRAMS to ACCESSORIES to ENTERTAINMENT to SOUND RECORDER).
2. Hook up a microphone to the computer, and click RECORD on the SOUND RECORDER (red button on right). Speak into the microphone.
3. Click STOP (square button second from right end) to stop the recording, and click PLAY to listen to the recorded sound (center button).

Saving Sound Files

1. In sound recorder, click FILE and click SAVE AS (—).
2. Click down arrow, and double click MY DOCUMENTS. Double click MY PICTURES. To save sounds in QuickCam, double click QUICKCAM. Double click ALBUM. Double click SOUNDS. Type in file name. Click SAVE.

Inserting and Formatting New Sound Files in PowerPoint®

1. Click on the slide on which you wish to have sound. Click INSERT.
2. Scroll to MOVIES AND SOUNDS. Click SOUND from FILE. Click MY

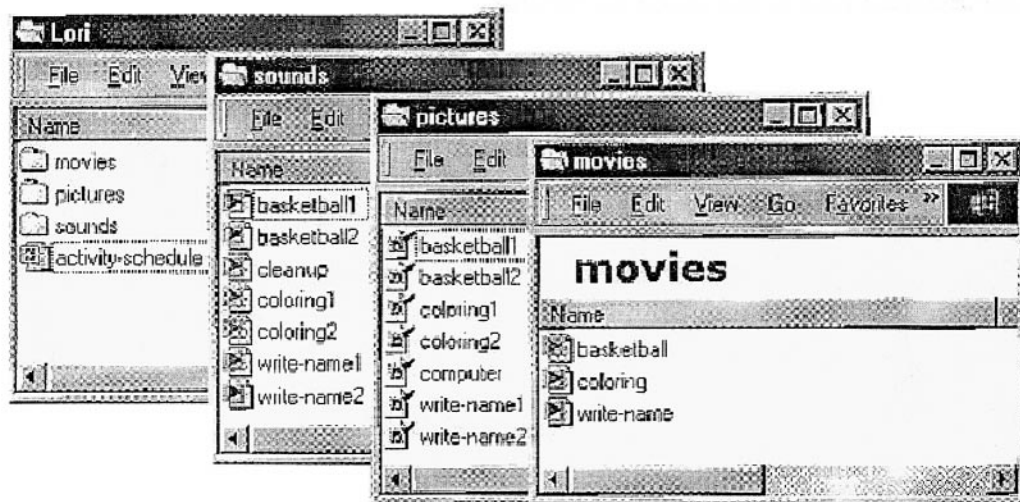


Figure 2. Slide sorter view of a three-item computer activity schedule (writing, basketball, and coloring), and movie, sound, and picture files.

DOCUMENTS. Click MY PICTURES. Click QUICKCAM. Click ALBUM. Click SOUNDS. Double click FILE OF CHOICE. Click YES when asked, "Do you want your sound to play automatically in the slide show?"

Figure 2 shows an example of the sound files involved.

Animating Sounds

1. Click once on slide to highlight it. Click SLIDE VIEW. Click SLIDE SHOW. Click CUSTOM ANIMATION.

2. Click HIDE WHILE NOT PLAYING (so that the user cannot repeatedly play the sound). Click OK.

Taking Pictures with Webcam

1. Open Logitech QuickCam. Click CANCEL when prompted to connect to the Internet. Click CREATE (light blue button on top left of menu).

2. Focus camera. Click TAKE A PICTURE beneath screen view of picture. Close the picture window. Picture will be automatically saved in pictures and movies folders, as shown in Figure 2.

Inserting New Pictures into PowerPoint®

1. Click once on activity picture slide. Click SLIDE VIEW. Click INSERT.

2. Scroll to and click on PICTURE. Click PICTURE FROM FILE. Click MY DOCUMENTS. Click QUICKCAM. Click ALBUM. Click PICTURES AND VIDEOS. Click PICTURES. Double click desired picture.

The pictures of the paper and pencil, basketball hoop, coloring book and crayons, and laptop computer shown in the schedule in Figure 2 are all examples of pictures that have been captured and inserted according to these instructions.

Recording Videos with Webcam

1. Double click Launch Logitech QuickCam. Click CANCEL when prompt-

ed to connect to the Internet. Click CREATE (light blue button on top left of menu).

2. Focus camera. Click RECORD A VIDEO to start recording. Click RECORD A VIDEO again when finished recording.

Inserting Videos into PowerPoint®

1. Click once on video slide. Click SLIDE VIEW. Click INSERT. Scroll to and click on MOVIES AND SOUNDS. Click MOVIE FROM FILE. Click MY DOCUMENTS. Click QUICKCAM. Click ALBUM. Click PHOTOS AND VIDEOS. Click VIDEOS. Double click on desired video.

2. Click YES when asked, "Do you want your movie to play automatically in the slide show?"

The third, sixth, and ninth slides shown on the schedule in Figure 2 play videos that have been created and inserted into PowerPoint® following these instructions. Figure 2 also shows the movie files involved in this particular schedule.

Opening PowerPoint®

Click on the START menu bar in the lower left corner of the screen. Scroll to PROGRAMS. Click on PowerPoint® (red icon to the left).

Creating Files

1. Click on FILE. Select NEW. Select BLANK PRESENTATION. Click on BLANK PRESENTATION LAYOUT and click OK.

2. Click on FILE. Click on SAVE AS. Select directory in which to save file. In FILE NAME, type "Activity Schedule." Click SAVE.

Establishing Slide Background

1. The storyboard is located in the lower left corner above the DRAW toolbar. Click on SLIDE SORTER VIEW.

2. Click once on the slide to highlight it.

Click FORMAT. Click BACKGROUND. Click the down arrow and select a dark color of your choice. (In the activity schedule shown in Figure 2, a black background was chosen.) Click APPLY.

Inserting Duplicate Slides

Click on SLIDE SORTER VIEW in the storyboard. Click EDIT. Click DUPLICATE. Click REPEAT DUPLICATE, for the number of desired slides.

Establishing the Initial Instruction Slide

1. Click Slide 1. Click NORMAL VIEW in the storyboard. Click INSERT. Click PICTURE. Click WORDART. Click your choice of designs. Click OK.

2. Click the down arrow on FONT. Scroll to and click on your choice. Click the down arrow on SIZE. Scroll to 72. Highlight "YOUR TEXT HERE" and type, "Time for your." Hit enter and type "activity schedule." Click OK.

(The initial instruction slide is the first slide shown on the schedule in Figures 1 and 2.)

Inserting Page Turners to Navigate between Slides

1. Click on AUTOSHAPES in the lower left corner. Select ACTION BUTTONS. Click arrow facing right for forward or next action button (see Figure 3). Click bottom right corner of the slide.

2. Drag to create a square, approximately 1 inch by 1 inch. The action settings box will immediately open, with HYPERLINK TO NEXT SLIDE selected (see Figure 3). Click OK. To reposition the action button, click once on it. Drag the mouse until action button is in desired position. (In Figure 2, the page turners are all in the lower right corner of Slides 1, 3, 4, 6, 7, 9, 10, and 11.)

Inserting Pictures

1. Click Slide 2. Click INSERT. Scroll to and click on PICTURE. Click FROM FILE

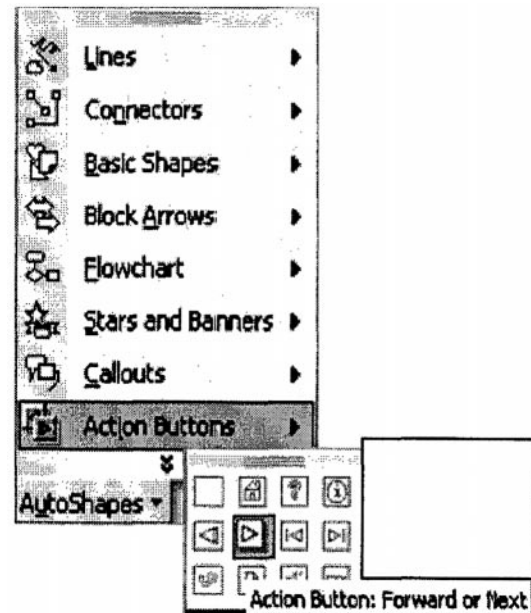


Figure 3. Establishing a page turner to navigate between slides and hyperlinking a page turner to the next slide.

to select a picture from the files. Click on the directory in which the picture is located. Double click on the desired file. Figure 2 shows examples of picture files used in the schedule shown.

2. To insert ClipArt pictures installed on

your computer with PowerPoint® 2000, click CLIPART. Type the name of the picture for which you wish to search in the text-box, SEARCH FOR CLIPS. Hit ENTER. Select a picture by double clicking on it. Close the INSERT CLIPART box by clicking on the red X.

3. To insert ClipArt pictures installed on your computer with PowerPoint® 2002, click CLIPART. Type the name of the picture for which you wish to search in the text box. Under SEARCH IN, hit the down arrow. Make sure that the box marked EVERYWHERE is checked. Click SEARCH. Double click the picture that you wish to insert. Close the INSERT CLIPART box by double clicking on the black X in the upper right corner of the box.

Resizing Pictures

Click on the lower left corner of the picture. Drag the mouse away from the picture's center until it is the desired size. To move the picture to the center of the screen, click in the center of the picture and drag the mouse until picture is positioned as desired.

Framing Pictures

Click on the picture. Click FORMAT (in PowerPoint® 2002, click PICTURE). Click COLORS AND LINES. Click down arrow on LINE COLOR. Select the box color of choice that will create a contrast between picture and slide. Click up arrow on WEIGHT. Select LINE WEIGHT of at least 1 point (see Figure 4). Click OK. (The activity picture slides shown in the schedule in Figure 2 all have a white frame surrounding the pictures.)

Animating Pictures Using PowerPoint® 2000

Click on the picture. Click SLIDE SHOW. Click CUSTOM ANIMATION. Click the down arrow in ENTRY ANIMATION AND SOUND and select an entry

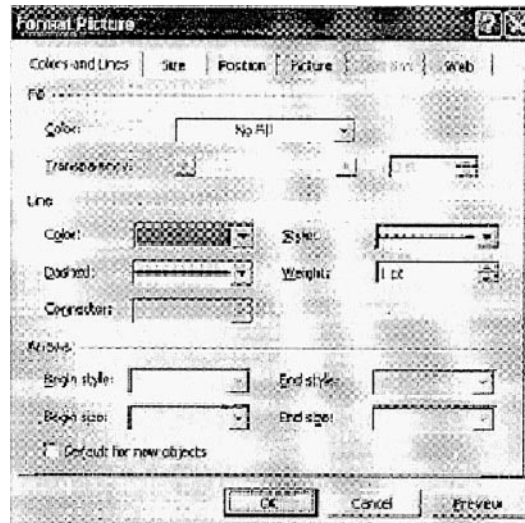


Figure 4. Framing a picture.

animation. Under CHECK TO ANIMATE SLIDE OBJECTS, check the slide object you wish to animate (e.g., Picture Frame 1). Click OK.

Animating Pictures Using PowerPoint® 2002

Click on the picture. Click SLIDE SHOW. Click CUSTOM ANIMATION. Click ADD EFFECT. Click ENTRANCE, EMPHASIS, EXIT, or MOTION PATHS to select an effect for entrance, and select effect of your choice (one or all effects can be selected for your picture). To remove an effect, click REMOVE. To preview the animation, click PLAY. To stop the preview, click STOP.

Repeat steps for inserting, resizing, framing, and animating pictures for the remaining four or five activity picture slides.

Action Settings for Pictures

You may want the learner to advance from slide to slide by clicking the mouse on the page turner inserted into the lower right corner of the activity picture slide, as previously described. Another possibility is for the learner to click the mouse on the picture to advance to the next slide. This would ensure

that the individual is visually oriented to the pictures in his or her schedule and is analogous to McClannahan and Krantz's (1999) requirement that the individual touch each picture in a handheld schedule before completing the activity. To create action settings for pictures, right click on the picture. Go to ACTION SETTINGS. Click HYPERLINK TO NEXT SLIDE. Click OK.

Viewing the Slide Show

After you have constructed a schedule consisting of an initial instruction slide and several activity picture slides, you may wish to view the slides as they would appear to the learner. To do this, click on SLIDE SHOW. Click on VIEW SHOW. Click the mouse anywhere on the slide to advance from one slide to the next. To exit the show at any time, hit ESC.

Setting Up Contingent Navigation

Navigation through the slide show must be arranged so that it is contingent on the learner's clicks to specific action buttons, pictures, movies, or text. To do this, click on SLIDE SHOW. Click on SET UP SHOW. Click on BROWSE AT KIOSK (FULL SCREEN). Click OK. View the slide show again with clicks on specific stimuli to note the restrictions.

ADDING A TIMER FOR OPEN-ENDED ACTIVITIES

PowerPoint® makes it possible to time activities using computer schedules, which, as discussed by McClannahan and Krantz (1999), affords the learner a number of advantages. For example, Slides 5, 6, and 7 of the schedule shown in Figure 2 include a timed activity, basketball. Slide 7 includes a clock that is programmed to time 120 s, after which time a chime will sound, signaling the individual to put the materials away and return to the schedule.

To extend the first activity schedule to include timed activities, follow the directions outlined above for inserting duplicate slides. Also follow the directions for adding a page turner to the new slides to navigate between slides, or for creating action settings on pictures so that the individual must orient to the pictures to advance from one slide to the next. If you wish to create an entirely new schedule for timed activities only, follow the directions outlined above for creating the initial instruction slide and activity picture slides.

Creating the Clock

1. Click once on a blank slide. Click Slide View.
2. Click the TEXT BOX button in the DRAW toolbar in the lower portion of the screen. Or click INSERT, click TEXT BOX (for those who do not have the DRAW toolbar activated). Click and drag on one of the four corners of the slide.
3. Type the number you want your timer to begin with (e.g., 60). Highlight the text and click the down arrow for FONT SIZE at the top of the screen (click FORMAT, then FONT for those who do not have the FORMATTING toolbar activated). Select 96.
4. Click on the text box and move the mouse cursor to the edge of the text box until a four-directional arrow appears. Click AGAIN. Click EDIT. Click DUPLICATE. Highlight the text in the new text box and change it so that it is one integer lower than the previous number (e.g., 59). You may want to move the new text box over slightly so it is easier to read while changing the text. Repeat this process for all the numbers you plan to use in your countdown (e.g., 58 to 1). Create the numbers in descending order but do not worry about their exact placement on the slide.
5. Once all of the numbers are on the new slide, click EDIT. Click SELECT ALL.

Click on DRAW on the DRAW toolbar. Click ALIGN or DISTRIBUTE. Click ALIGN LEFT or ALIGN RIGHT. Click DRAW, and click ALIGN or DISTRIBUTE. Click ALIGN TOP, ALIGN MIDDLE, or ALIGN BOTTOM. The text boxes should now be on top of each other, and the numbers should be unreadable.

Animating the Clock Using PowerPoint® 2000

1. Click on EDIT and click on SELECT ALL to select all of the text boxes again.

2. Click on SLIDE SHOW. Click on CUSTOM ANIMATION. Click on the ORDER & TIMING tab. All of the text boxes will be listed; make sure that they are in the ascending order in which they were created (e.g., Text 1 to 60). Animate all of the text boxes by clicking next to them in the window: CHECK TO ANIMATE SLIDE OBJECTS.

3. Select AUTOMATICALLY in the START ANIMATION window. Set the time to 00:01 seconds after previous event. Click on the EFFECTS tab. Choose APPEAR from the ENTRY ANIMATION AND SOUND dropdown list. Click HIDE AFTER ANIMATION from the AFTER ANIMATION dropdown list. Click OK.

4. Click on SLIDESHOW. Click on SLIDE TRANSITION. Leave NO TRANSITION as the selection in the EFFECT dropdown list. Deselect ADVANCE ON MOUSE CLICK, and select AUTOMATICALLY after 00:01 seconds.

5. Click on the SLIDE SORTER on the storyboard. Click on the slide immediately following the slide with the timer. Click on SLIDE SHOW and click on SLIDE TRANSITION. Click the arrow in the dropdown box under SOUND to select a sound to play when the timer is finished counting down, to signal the end of the activity. Click APPLY.

Animating the Clock Using PowerPoint® 2002

1. Click on EDIT and click on SELECT ALL to select all of the text boxes again. Click on SLIDE SHOW. Click on CUSTOM ANIMATION. Click on ADD EFFECT. Click on ENTRANCE and select APPEAR. Click on ADD EFFECT again. Click on EXIT and select DISAPPEAR.

2. Click on the dropdown box for all of the text boxes. Click on TIMING. Select START AFTER PREVIOUS. Select delay of 1 second. Click OK.

3. In the animation box, all of the animations selected for each shape are listed. Click on the row for the exit animation for the first Text Box. A red star symbolizes exit animation. Drag the mouse to move the exit animation for the first text box directly under the entrance animation for that same text box. A green star symbolizes entrance animation. Repeat this process for each text box. When you are finished, the animation box should list entrance, followed by exit, animation for each text box.

4. Click on SLIDESHOW. Click on SLIDE TRANSITION. Leave NO TRANSITION as the selection. Deselect ADVANCE ON MOUSE CLICK, and select AUTOMATICALLY after 00:01 seconds.

5. Click on the slide immediately following the slide with the timer. Click on SLIDE SHOW and click on SLIDE TRANSITION. Click the arrow in the dropdown box under SOUND to select a sound to play when the timer is finished counting down, to signal the end of the activity.

ADDING SOUND FILES TO ACTIVITY SCHEDULES

There are a number of advantages to incorporating sound in an existing activity schedule (see McClannahan & Krantz, 1999, pp. 33–34, 93–96; see also Stevenson *et al.*, 2000).

Adding Sounds to Activity Picture Slides

1. Click on the picture on the slide while in slide view. To insert sounds from your own files, Click INSERT. Click MOVIES AND SOUNDS. Click SOUND FROM FILE. Click on down arrow to obtain the desired file. When asked, "Do you want your sound to play automatically in the slide show?" click YES. Click SLIDE SHOW. Scroll to and click on CUSTOM ANIMATION. Click HIDE WHILE NOT PLAYING in the multimedia tab. Click OK. (Figure 2 shows examples of the sound files involved in the activity schedule shown.)

2. To select a sound that was installed on your computer with PowerPoint® using PowerPoint® 2000, click SLIDESHOW after clicking on the picture. Click CUSTOM ANIMATION. Click down arrow in sound box under ENTRY ANIMATION AND SOUND. Scroll down and select desired sound. Click OK.

3. To select a sound that was installed on your computer using PowerPoint® 2002, click INSERT MOVIES AND SOUNDS. Click SOUND FROM CLIP ORGANIZER. Select sound clip by double clicking. Click YES when asked if you want the sound to play automatically in the slide show. Close the insert sound clip box by clicking the black X in the upper right corner.

Adding Sounds to Slide Transitions

1. Click SLIDE SHOW. Click SLIDE TRANSITION. Click the down arrow under SOUND. Select desired sound, or click OTHER SOUND and select desired sound from your own files by double clicking.

2. Using PowerPoint® 2002, click PLAY to preview the sound and STOP to stop the preview.

3. Click APPLY TO ALL.

ADDING TEXT TO ACTIVITY SCHEDULES

It may be desirable to enhance an existing activity schedule with text for a number of reasons (see Krantz & McClannahan, 1993, 1998). To fade pictures systematically, it is possible to begin with a compound stimulus representation of the picture with its corresponding printed word embedded within. One can prepare multiple compound stimuli by hand, with the size of the picture gradually faded across stimuli until only the textual cue remains (see McClannahan & Krantz, 1999, p. 85). You can then photograph the stimuli and insert them into your schedule. A second possibility is to insert a text box into PowerPoint® on top of the picture, and as the compound stimulus acquires control over the individual's behavior, decrease the size or brightness of the picture. (Some users may find the preparation of multiple compound stimuli laborious. It may also be advantageous to teach the individual conditional discriminations between the picture and its corresponding printed word outside the context of activity schedule teaching, and then substitute the printed word for the picture within the schedule; see Lalli, Casey, Goh, & Merlino, 1994; Rehfeldt, 2002).

Inserting Text on Activity Picture Slides

1. Click on activity picture slide in slide view. Click on text box in DRAW toolbar (white box with "A" and several lines). Insert text box in desired location on slide by clicking and dragging on top of picture for establishing a textual schedule.

2. Type name of activity or script in text box after positioning cursor in it. To change the font of the text, highlight the text with the mouse. Click FORMAT. Click FONT. Scroll down to and click on desired font size. To change the color of the text, click the down arrow under COLOR and select a col-

or that will show up on the dark background. You may also wish to use boldface for the text if it appears on top of a picture. Click OK.

3. To lengthen text box, move mouse over right corner, click and drag mouse to right.

Figure 2 shows an example of text that was created in this manner on Slide 12, where the text box beneath the picture reads, "Miss Lisa, can I play with the computer?"

ADDING MOVIE FILES TO ACTIVITY SCHEDULES

Computer schedules created in PowerPoint® provide the exciting possibility of embedding video modeling training procedures (see Rehfeldt, Dahman, Young, Cherry, & Davis, 2003; Rehfeldt, Latimore, & Stromer, 2003; Taylor, Levin, & Jasper, 1999) within the activity schedule.

Inserting Video

Click on VIDEO SLIDE in slide view. Click INSERT. Scroll to MOVIES AND SOUNDS. Click MOVIE FROM FILE (see Figure 5). Locate file in appropriate directory. Double click on file to select desired file. When asked "Do you want your movie to play automatically in the slide show?" click YES. (Figure 2 shows the movie files for basketball, coloring, and writing name that are used in the schedule shown.)

Animating Movies

Click once on VIDEO SLIDE to highlight it. Click SLIDE SHOW. Click CUSTOM ANIMATION. Click HIDE WHILE NOT PLAYING. Click OK.

ADVANCED CAPABILITIES AND FUTURE RESEARCH

The directions we have provided are sufficient for creating any of the basic activity schedules we have described in this paper.

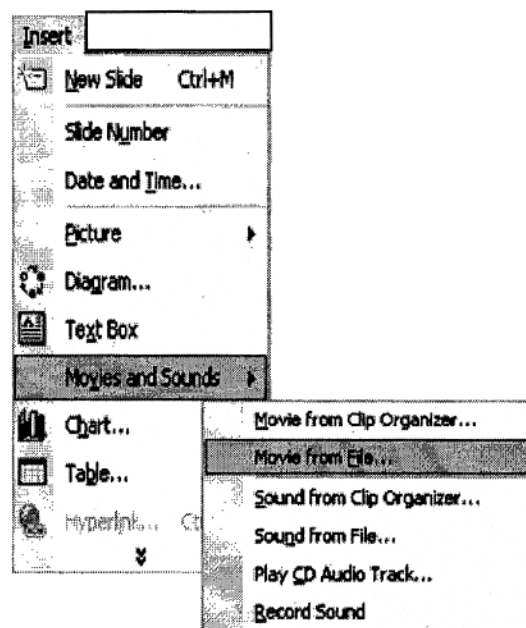


Figure 5. Inserting movies from file.

There are other possibilities that an advanced PowerPoint® user may wish to explore. First, an individual may be taught to sequence the activities in his or her schedule by reordering the activity picture slides. Second, videos, animation clips, cartoons, and games can be programmed as reinforcers in an individual's schedule, and an individual can be taught to deliver his or her own reinforcers. Third, a schedule follower can be taught to choose activities or reinforcers in his or her schedule from a pool of activity picture or video slides. Fourth, you may wish to program discrete-trial discrimination or conditional discrimination tasks in the activity schedule, in which case it may be important to record the learner's responses. Microsoft® Visual Basic® can be used to control PowerPoint® macros such that with the correct code, the user's responses will be recorded. The reader will find a number of commercially available support resources that may be useful in creating these and other elaborations.

Potential drawbacks to the use of com-

puter activity schedules warrant mention: First, unlike handheld notebooks, computer schedules are not easily portable. It may be cumbersome for the learner who completes activities in several different rooms of his or her home to have to return to one location before going on to the next activity. Moreover, unless the appropriate equipment is available in multiple settings, generalization of schedule-following skills across settings cannot be ensured. One promising solution may be the use of Microsoft Pocket PCs, which would provide the learner with a handheld computer schedule that could be easily transported from one setting to the next. A second drawback concerns the learning opportunities that may be lost in the event of mechanical failure. A possible solution to this barrier may be for the learner to have a handheld notebook schedule consisting of slide printouts from the computer schedule to use as a back-up when necessary. A final concern regarding the use of computer schedules is that many families or educational settings are unlikely to have the financial resources necessary to provide equipment with optimal system requirements. It is hoped that as computer technology advances and prices become more affordable, the availability of computers with minimum or optimal system requirements will become more widespread.

Future research should evaluate the degree to which skills acquired via a computer schedule will generalize across settings. It may also be important to assess the learner's preference for using computer schedules versus handheld notebook schedules, as well as parent, teacher, or staff acceptability of an individual's use of computer schedules. Comparisons of training time and engagement time between handheld notebook schedules and computer schedules will be of value. Finally, it may be worthwhile to examine whether reductions in aberrant or stereotypic behaviors can be established follow-

ing the use of a computer schedule (see Lalli et al., 1994).

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